WASHINGTON STATE DEPARTMENT OF ECOLOGY
POST OFFICE BOX 47600
OLYMPIA, WASHINGTON 98504-7600

IN THE MATTER OF:	**]**	
	]	**NO. PSD-02-01 AMENDMENT 1**
United States Department of Energy	**]**	
Waste Treatment Plant	**]**	
3000 George Washington Way	**]**	**FINAL APPROVAL**
Richland, WA 99352	**]**	**OF PSD APPLICATION**

Pursuant to the United States Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40, Code of Federal Regulations, Part 52 and regulations set forth in the Washington Administrative Code 173-400-141 and based upon the complete Notice of Construction Application (NOC) submitted by The United States Department of Energy on submitted on July 1, 2003, and the technical analysis performed by the Department of Ecology (the department), now finds the following:

FINDINGS:

1. The United States Department of Energy proposes to modify their existing facility (Hanford) located in Richland, Washington.

2. PSD-02-01 was originally issued on July 2, 2002. That permit authorized the construction and operation of a pretreatment plant, a Low Activity Waste (LAW) vitrification plant, a High Activity Waste (HLW) vitrification plant, five steam generating boilers, four hot water boilers, a diesel fire pump, and six emergency diesel generators.

3. Today's project consists of reducing the number of LAW melters from three to two; an increase in the number of HLW melters from one to two; a change in the size and number of steam generating boilers from nine to six, a change in the size and number of emergency generators from six to three; and a change in the size and number of diesel firewater pumps from one to two.

4. This project is subject to New Source Performance Standards (NSPS): 40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units).

5. Hanford is an existing major stationary source that emits more than 250 tons of a regulated pollutant per year.

6. This project qualifies as a major modification because nitrogen oxides (NO_X) have "significant" emission increases that are greater than 40 tons per year.

7. This project qualifies as a major modification because particulate matter finer than 10 microns in diameter (PM_{10}) have "significant" emission increases that are greater than 15 tons per year.

8. The emissions of all other air pollutants from the proposed modification are subject to review under Chapters 173-400 and 460 WAC by the Washington State Department of Ecology Nuclear Waste Program.

9. The United States Department of Energy has elected to take a federally enforceable limit on the number of hours three of the six steam generating boilers, the two diesel fire pumps, the Type I emergency diesel generator, and two Type II emergency diesel generators will operate each year.

10. The project will result in a potential to emit up to 150.7 tons of NO_X per year.

11. The project will result in a potential to emit up to 24.2 tons of PM_{10} per year.

12. A caustic scrubber has been determined to be Best Available Control Technology (BACT) for the control of NO_X emissions from the pretreatment facilities.

13. High Efficiency Particulate Air (HEPA) filtration has been determined to be BACT for the control of PM_{10} emissions from the pretreatment facilities.

14. Selective Catalytic Reduction (SCR) has been determined to be BACT for the control of NO_X emissions from the LAW vitrification plant.

15. HEPA filtration has been determined to be BACT for the control of PM_{10} emissions from the LAW vitrification plant.

16. SCR has been determined to be BACT for the control of NO_X emissions from the HLW vitrification plant.

17. HEPA filtration has been determined to be BACT for the control of PM_{10} emissions from the HLW vitrification plant.

18. Low NO_X burners, plus steam atomization, has been determined to be BACT for the control of NO_X emissions from the steam plant.

19. Good combustion practices, plus reduced operation, has been determined to be BACT for the control of PM_{10} emissions from the steam plant.

20. Good combustion practices, plus reduced operation, has been determined to be BACT for the control of NO_X emissions from the Type I and Type II emergency diesel generators.

21. Good combustion practices, plus reduced operation, has been determined to be BACT for the control of PM_{10} emissions from the Type I and Type II emergency diesel generators.

22. Good combustion practices, plus reduced operation, has been determined to be BACT for the control of NO_X emissions from the diesel fire pump.

23. Good combustion practices, plus reduced operation, has been determined to be BACT for the control of PM_{10} emissions from the diesel fire pump.

24. A 99.9% effective baghouse has been determined to be BACT for the control of PM_{10} emissions from the glass former facility.

25. The project is located in an area that has been designated Class II for the purposes of PSD evaluation. The nearest Class I Areas are identified in Table 1 below:

Class I Area	Distance
Alpine Lakes Wilderness Area	85 mi. (137 km)
Goat Rocks Wilderness Area	88 mi (142 km)
Mt. Adams Wilderness Area	95 mi (153 km)
Mt. Rainier National Park	95 mi (153 km)
Eagle Cap Wilderness Area	115 mi (185 km)

Table 1

26. The project is located in an area that is currently designated in attainment for all national air quality standards and all state air quality standards.

27. The ambient impacts of the proposed increase in emissions were determined with the EPA's Industrial Source Complex Short-Term Model Version 3 (ISCST3).

28. Table 2 below identifies the Class I, NO_X modeling results as compared to the Modeled Significance Level (MSL). The units are in micrograms per cubic meter ($\mu g/m^{3)}$.

Averaging Period	Alpine Lakes Wilderness Area	Goat Rocks Wilderness Area	Mt. Adams Wilderness Area	Mt. Rainier National Park	Eagle Cap Wilderness Area	Maximum modeled concentration at 50 km from facility	MSL
Annual	0.00250	0.00194	0.00175	0.00316	0.00505	0.15	1

Table 2

29. Table 3 below identifies the Class I, PM_{10} modeling results as compared to the Modeled Significance Level (MSL). The units are in micrograms per cubic meter ($\mu g/m^{3)}$.

Averaging Period	Alpine Lakes Wilderness Area	Goat Rocks Wilderness Area	Mt. Adams Wilderness Area	Mt. Rainier National Park	Eagle Cap Wilderness Area	Maximum modeled concentration at 50 km from facility ration	MSL
24-hour	0.049	0.053	0.046	0.046	0.058	0.299	5
Annual	0.00041	0.00030	0.00027	0.00047	0.00080	0.025	1

Table 3

30. NO_X emissions from this project are below the Class I modeling significance levels; therefore, an increment analysis was not performed.

31. PM_{10} emissions from this project are below the Class I Area modeling significance levels; therefore, an increment analysis was not performed.

32. The project will have no significant impact on ambient air quality.

33. The project will not have a noticeable effect on industrial, commercial, or residential growth in the Richland area.

34. Visibility, deposition, and other air quality related values are not expected to be significantly impaired at the Alpine Lakes Wilderness Area, Goat Rocks Wilderness Area, Mt. Adams Wilderness Area, Mt. Rainier National Park, or the Eagle Cap Wilderness Area.

35. At the point of maximum NOx increment consumption due to this project, there is 6.07 $\mu g/m^3$ (24-hour) and 3.29 $\mu g/m^3$ (annual) remaining.

36. The department finds that all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.

APPROVAL CONDITIONS:

1. This permit supersedes PSD-02-01 issued on July 2, 2002.

2. Each steam generating boiler, diesel fire pump, and backup emergency generator shall be fired by ultra-low sulfur diesel fuel, with a maximum sulfur content of 0.003% by wt.

   2.1 Compliance shall be determined by keeping records of fuel purchased.
   2.2 Compliance shall be monitored by including a written statement in each semiannual report of the type of fuel purchased.

3. Emissions of PM or PM_{10} from the pretreatment plant shall not exceed 0.02 g/dscf when averaged over 24 consecutive hours or 0.456 lb/hr averaged over 24 consecutive hours.

   3.1 Compliance shall be determined by testing for PM_{10} only using 40 CFR 60 Appendix A, Method 5, 40 CFR 51 Appendix M Method 201 or 201A for the front half analysis and 40 CFR 51 Appendix M Method 202 for the back half.
   3.2 Within 60 days of achieving hot commissioning, but no later than 180 days from initial startup, the pretreatment plant shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 3.1 above.
   3.3 Compliance shall be monitored by submitting calculations based upon source testing results and hours of operation. This unit shall be source tested once every five (5) years in accordance with Approval Condition 3.1 above.

4. Emissions of NO_X from each LAW vitrification plant shall not exceed 477 parts per million dry by volume (ppmdv) at 21% oxygen (O_2) averaged over 24 consecutive hours or 200.1 pounds per day averaged over 30 consecutive days.

   4.1 Compliance shall be determined by 40 CFR 60 Appendix A, Method 7E.
   4.2 Within 60 days of achieving hot commissioning, but no later than 180 days from initial startup, the LAW vitrification plant shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 4.1 above.
   4.3 Compliance shall be monitored by a Continuous Emission Monitor (CEM) for NO_X and a flow meter. The CEM's must meet Performance Specifications 2 and 6 of 40 C.F.R. Part 60, Appendix B and quality control/quality assurance requirements of 40 C.F.R. Part 60, Appendix F.

5. Emissions of PM or PM_{10} from each LAW vitrification plant shall not exceed 0.36 pounds per hour at 21% O_2, when averaged over 24 consecutive hours.

   5.1 Compliance shall be determined by testing for PM_{10} only using 40 CFR 60 Appendix A, Method 5, 40 CFR 51 Appendix M Method 201 or 201A for the front half analysis and 40 CFR 51 Appendix M Method 202 for the back half.

5.2 Within 60 days of achieving hot commissioning, but no later than 180 days from initial startup, the LAW vitrification plant shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 5.1 above.

5.3 Compliance shall be monitored by submitting calculations based upon source testing results and hours of operation. This unit shall be source tested once every five (5) years in accordance with Approval Condition 5.1 above.

6. Emissions of NO_X from each HLW vitrification plant shall not exceed 352 ppmdv at 21% O_2 over a 24-hour averaging period or 23.3 pounds per day when averaged over 30 consecutive days.

6.1 Compliance shall be determined by 40 CFR 60 Appendix A, Method 7E.

6.2 Within 60 days of achieving hot commissioning, but no later than 180 days from initial startup, the HLW vitrification plant shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 6.1 above.

6.3 Compliance shall be monitored by a Continuous Emission Monitor (CEM) for NO_X and a flow meter. The CEM's must meet Performance Specifications 2 and 6 of 40 C.F.R. Part 60, Appendix B and quality control/quality assurance requirements of 40 C.F.R. Part 60, Appendix F.

7. Emissions of PM or PM_{10} from each HLW vitrification plant shall not exceed 0.135 pounds per hour at 21% O_2, when averaged over 24-consecutive hours.

7.1 Compliance shall be determined by testing for PM_{10} only using 40 CFR 60 Appendix A, Method 5, 40 CFR 51 Appendix M Method 201 or 201A for the front half analysis and 40 CFR 51 Appendix M Method 202 for the back half.

7.2 Within 60 days of achieving hot commissioning, but no later than 180 days from initial startup, the HLW vitrification plant shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 7.1 above.

7.3 Compliance shall be monitored by submitting calculations based upon source testing results and hours of operation. This unit shall be source tested once every five (5) years in accordance with Approval Condition 7.1 above.

8. The operation of steam generating boilers 1, 2, and 3 do not have limits on their hours of operation. The operation of steam generating boilers 4, 5, and 6 shall not exceed 3,679 hours per year (each) when averaged over 12 consecutive months, calculated once per month.

8.1 Compliance shall be determined by installing and operating a non-resetable totalizer on each boiler.

8.2 Compliance shall be monitored by including a written statement in each semiannual report of the hours boilers 4, 5, and 6 operated that month and the summation over the previous 12 months.

9. Emissions of NO_X from each steam boiler shall not exceed 0.09 lb/MMBtu at 3% O_2, or 4.52 lb/hr averaged over 24 consecutive hours.

9.1 Compliance shall be determined by 40 CFR 60 Appendix A, Method 7E.
9.2 Within 60 days of achieving hot commissioning, but no later than 180 days from initial startup, each steam boiler shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 9.1 above.
9.3 Compliance shall be monitored by submitting calculations based upon source testing results and hours of operation. These units shall be source tested in accordance with Approval Condition 9.1 every five years.

10. Emissions of PM or PM_{10} from each steam boiler shall not exceed 0.02 lb/MMBtu or 1.0 lb/hr averaged over a 24 consecutive hours.

10.1 Compliance shall be determined by testing for PM_{10} only using 40 CFR 60 Appendix A, Method 5, 40 CFR 51 Appendix M Method 201 or 201A for the front half analysis and 40 CFR 51 Appendix M Method 202 for the back half.
10.2 Within 60 days of achieving hot commissioning, but no later than 180 days from initial startup, each steam boiler shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 10.1 above.
10.3 Compliance shall be monitored by submitting calculations based upon source testing results and hours of operation. These units shall be source tested once every five (5) years in accordance with Approval Condition 10.1 above.

11. The operation of the Type I emergency generator shall not exceed 164 hours per year when averaged over 12 consecutive months, calculated once per month.

11.1 Compliance shall be determined by installing and operating a non-resetable totalizer on each generator.
11.2 Compliance shall be monitored by including a written statement in each semiannual report of the hours the emergency generators operated in each of the six (6) months covered by the report and the summation of hours operated over the previous 12 months.

12. Emissions of NO_X from the Type I emergency generator shall not exceed 943 ppmdv or 391.1 pounds per day, at 3% O_2, when averaged over 24 consecutive hours.

12.1 Compliance shall be determined by 40 CFR 60 Appendix A, Method 7E.
12.2 Within 60 days of achieving hot commissioning, but no later than 180 days from initial startup, each emergency generator shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 12.1 above.
12.3 Compliance shall be monitored by submitting calculations based upon source testing results and hours of operation. This unit shall be source tested in accordance with Approval Condition 12.1 once every five years.

13. The operation of the Type II emergency generators shall not exceed 164 hours per year (each) when averaged over 12 consecutive months, calculated once per month.

13.1 Compliance shall be determined by installing and operating a non-resetable totalizer on each generator.

13.2 Compliance shall be monitored by including a written statement in each semiannual report of the hours the emergency generators operated in each of the six (6) months covered by the report and the summation of hours operated over the previous 12 months.

14. Emissions of NO_X from the Type II emergency generators shall not exceed 1,240 ppmdv or 547.5 pounds per day (each), at 3% O_2, when averaged over 24 consecutive hours.

14.1 Compliance shall be determined by 40 CFR 60 Appendix A, Method 7E.

14.2 Within 60 days of achieving hot commissioning, but no later than 180 days from initial startup, each emergency generator shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 14.1 above.

14.3 Compliance shall be monitored by submitting calculations based upon source testing results and hours of operation. These units shall be source tested in accordance with Approval Condition 14.1 once every five years.

15. The operation of each diesel fire pump shall not exceed 110 hours per year averaged over 12 consecutive months, calculated once per month.

15.1 Compliance shall be determined by installing and operating a non-resetable totalizer on each diesel fire pump.

15.2 Compliance shall be monitored by including a written statement in each semiannual report of the hours the diesel fire pumps operated in each of the six (6) months covered by the report and the summation of hours operated over the previous 12 months.

16. The NO_X emission concentrations (ppm) do not apply during startup and shutdown. Startup for all emission units will be defined in the operation and maintenance manual (O&M) discussed in Condition 18 below.

17. The United States Department of Energy shall report the following monitoring data to the Department of Ecology's Nuclear Waste Program.

17.1 Submit the performance test data from the initial performance test and the performance evaluation of the CEM's using the applicable performance specifications in 40 C.F.R. Appendix B.

17.2 Submit copies of each source test performed on emission units regulated by this order.

17.3 Submit a report semiannually, or on another approved reporting schedule, and in the format approved by the department that includes the following information:

i) Calendar date or monitoring period,
ii) Type of fuel fired as required by Approval Condition 2,
iii) Total operating hours from each unit required to do so in Approval Conditions 8, 11, 13,and 15 above,

iv) Total NO_X emissions for each unit required to do so in Approval Conditions 4, 6, 9, 12, and 14 above,
v) Total PM_{10} emissions for each unit required to do so in Approval Conditions 3, 5, 7, 10, 12, and 14 above; and
vi) Identification of any days for which NO_X CEM data were not obtained, including reasons for not obtaining sufficient data and description of corrective actions taken.

17.4 In addition, each semiannual report shall include:

i) Days for which data was not collected,
ii) Reasons for which data was not collected,
iii) Identification of times when the pollutant concentration exceeded the span of the CEM,
iv) Description of any modifications to the CEM system that could affect the ability of the system to comply with Performance Specifications 2 or 6; and
v) Results of any CEM drift tests.

17.5 In addition, the United States Department of Energy shall maintain monitoring records on site for at least five years and shall submit:

i) Excess emission reports to the Department of Ecology Nuclear Waste Program as appropriate; and
ii) Results of any compliance source tests.

18. Within 90 days of startup, the United States Department of Energy shall identify operational parameters and practices that will constitute proper operation of LAW vitrification plant, the HLW vitrification plant, the steam generating boilers, and the emergency generators. These operational parameters and practices shall be included in an O&M manual for the facility. The O&M manual shall be maintained and followed by the United States Department of Energy and shall be available for review by state, federal, and local agencies. Emissions that result from a failure to follow the requirements of the O&M manual may be considered credible evidence that emission violations have occurred.

19. Any activity, which is undertaken by the company or others, in a manner, which is inconsistent with the application and this determination, shall be subject to enforcement under the applicable regulations.

20. Access to the source, by the EPA, state, and local regulatory personnel shall be permitted upon request for the purposes of compliance assurance inspections. Failure to allow such access is grounds for an enforcement action.

21. This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of the final approval, or if construction of the facility is discontinued for a period of eighteen (18) months, unless the department extends the 18-month period, pursuant to 40 C.F.R. 52.21(r)(2) and applicable EPA guidance.

Reviewed by:

_____ DATE:_____

Richard B. Hibbard, P.E.
Technical, Information, & Engineering Services
Washington State Department of Ecology

Approved by:

_____ DATE:_____

Mary E. Burg
Program Manager
Washington State Department of Ecology

Should Table A.1 disagree with any Approval Condition in the PSD permit, the Approval Conditions in the permit govern.

Table A.1 Approval Conditions

Emission Unit	Pollutant/Approval Condition #	Condition	Compliance Determination	Compliance Frequency
Steam Generating Boilers, Diesel Fire Pumps, Backup Emergency Generators	Fuel Approval Condition 2	Ultra-low sulfur fuel 0.003% by wt.	Recordkeeping	Semiannual
Pretreatment Plant	PM_{10} Approval Condition 3	0.02 g/dscf 24- hour ave or 0.456 lb/hr 24-hour ave	40 CFR 60 Appendix A, Method 5, 40 CFR 51 Appendix M Method 201 or 201A for the front half analysis and 40 CFR 51 Appendix M Method 202 for the back half.	5 years
LAW Vitrification Plant	PM_{10} Approval Condition 5	0.36 lb/hr 21% O_2, 24-hr avg.	40 CFR 60 Appendix A, Method 5, 40 CFR 51 Appendix M Method 201 or 201A for the front half analysis and 40 CFR 51 Appendix M Method 202 for the back half	5 years
	NO_X Approval Condition 4	477 ppmdv at 21% O_2, 24 hr avg. or 200.1 lb/day 30-day rolling avg.	40 CFR 60 Appendix A, Method 7E, CEM	CEM Continuous
HLW Vitrification Plant	PM_{10} Approval Condition 7	0.135 lb/hr 21% O_2, 24-hr avg.	40 CFR 60 Appendix A, Method 5, 40 CFR 51 Appendix M Method 201 or 201A for the front half analysis and 40 CFR 51 Appendix M Method 202 for the back half	5 years
	NO_X Approval Condition 6	352 ppmdv at 21% O_2, 24 hr avg. or 23.3 lb/day 30-day rolling avg.	40 CFR 60 Appendix A, Method 7E, CEM	CEM Continuous

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Emission Unit	Pollutant/Approval Condition #	Condition	Compliance Determination	Compliance Frequency
Steam Boilers	Approval Condition 8	For steam boilers 4, 5, and 6 3,679 hours of operation per year	Installing and operating a non-resetable totalizer	Semiannual
	PM_{10} Approval Condition 12	0.02 lb/MMBtu 1.0 lb/hr 24-hours.	40 CFR 60 Appendix A, Method 5, 40 CFR 51 Appendix M Method 201 or 201A for the front half analysis and 40 CFR 51 Appendix M Method 202 for the back half	5 years
	NO_X Approval Condition 9	0.09 lb/MMBtu 3% O_2, 4.52 lb/hr 24-hr avg.	40 CFR 60 Appendix A, Method 7E, CEM	CEM Continuous
	Fuel Approval Condition 2	Ultra-low sulfur fuel 0.003% by wt.	Record keeping	Semiannual
Emergency Generators	Fuel Approval Condition 2	Ultra-low sulfur fuel 0.003% by wt.	Record keeping	Semiannual
	Hours of operation Approval Conditions 11and 13	164 hours per year 12 month rolling summation	Installing and operating a non-resetable totalizer on each boiler.	Written statement in each semiannual report
	NO_X Type I Generator	Approval Condition 12 943 ppmdv, 391.1 lb/day 24-hr ave.	40 CFR 60 Appendix A, Method 7E	5 years
	NO_X Type II Generator	Approval Condition 12 1,240 ppmdv, 547.5 lb/day 24-hr ave.	40 CFR 60 Appendix A, Method 7E	5 years
Diesel Fire Water Pumps	Fuel Approval Condition 2	Ultra-low sulfur fuel 0.003% by wt.	Record keeping	Semiannual
	Hours of operation Approval Condition 15	110 hours per year 12 month rolling summation	Installing and operating a non-resetable totalizer on each boiler.	Written statement in each semiannual report

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